ORIGINAL ARTICLE

Laparoscopic versus Open Appendicectomy - A Prospective Comparative Study of 100 Patients

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ABSTRACT

Objective: To compare open and Laparoscopic appendicectomy and to evaluate the level of efficacy of both in light of patient welfare and management with less postop complications and hospital stay.
Methods: For this method, 100 consecutive patients with diagnosis of acute Appendicitis were selected (50 patients of open and 50 of laparoscopic appendicectomy). Only adult patient (15-58yr) and with no co morbidity were selected to further reduce the chances of post op complications. In addition, to reduce any discrepancy in surgical expertise/ method, cases done by same surgeon were selected. Incidence of wound infection with laparoscopic appendicectomy was (2%) as compared to (6%) open appendicectomy. Intra abdominal infections were less in laparoscopic appendicectomy along with less hospital stay along with early return of bowel functions. Operative time was almost equivalent in both types of surgeries. Post op requirement of analgesia was less in Laparoscopic appendicectomy.
Conclusion: Laparoscopic appendicectomy is a better and safe option as compared to open appendicectomy. It significantly reduces post op complications with less hospital stay eventually helping in cost management with early mobility of the patient.
Key words: Laparoscopy, acute appendicitis, patient welfare

INTRODUCTION

Open appendicectomy has been a safe and usually opted mode of operation for acute appendicitis for more than a century, but since last 10 years laparoscopic appendicectomy is gaining popularity, although still not as popular as laparoscopic cholecystectomy[1]. According to literature, approximately 7% of population develops appendicitis with peak incidence between 10-30 years[2]. Thus, open appendicectomy remains the most performed intra abdominal surgery. With new surgical techniques, the quest for less invasive surgery, smaller incisions leading to shorter hospital stay with less postoperative complication is driving surgeons to perform laparoscopic surgeries. In 1981 Seem, a German gynecologist performed the first laparoscopic appendicectomy[3]. Since then Laparoscopic, appendicectomy is gaining popularity due to the added benefit of shorter hospital stay, early return of bowel functions, minimal postoperative complications and early mobilization[4,5].

METHODS AND MATERIAL

All adult patient (>15 years of age) between February 2010 till October 2010 were selected and data was used for the study. The information review included age/sex, procedure (open or lap appendicectomy), operation time, time taken for restoration of bowel function, post op analgesia requirement, hospital stay and wound status. Patients with no co morbidity and no previous lower abdominal surgery were selected for inclusion in this study. Patients with co morbid conditions associated with high-risk general anesthesia and appendicular mass were excluded from this study. Data was collected consecutively along with each patient's admission and marked with study purpose for the whole duration of hospital stay. Ratios, variables, frequencies and proportions were calculated and mean and standard deviations were found and maintained in chi- square and p value. Study population: Adult patients between 15- 58 years of age were selected, male ratio female ratio with no co morbidity.

Operative time: Operative time (calculated in minutes) is defined as the difference between the start of surgery, which was taken from draping of patient till the abdomen closure with skin suturing.

Length of hospital stay: The length of hospital stay (calculated in days) is defined as the difference between the day of surgery and day of discharge of the patient. Length of stay was coded as zero for discharge on the day of surgery, whether in the evening or nighttime.

Return/restoration of bowel functions: This is defined as the passage of flatus/stool and return of gut sounds indicating gut motility post operatively. It is calculated in hours.

Post op analgesia requirement: This is defined as the requirement of intravenous or intramuscular

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injection post operatively in the ward or private room. It is calculated in numbers.

Post-operative complication: This is defined as any complication occurring during post op recovery involving respiratory, gastrointestinal, urinary, and vascular system.

Wound infection: It is defined as redness, erythema, or serosengious discharge from the wound occurring after 3-4 days.

In hospital mortality. There was no hospital mortality in both cases.

RESULTS

Procedure	Laparoscopic	Open
Operative time (min)	48.78	49.9
Return of bowel function (hrs)	8.20	12.40
NPO off (hrs)	12	18
Wound infection (%)	2	6
Postop analgesia requirement (no of injection)%	13	2.3
Hospital stay (days)	16	3.9

Study population: Fifty patients both adult male and female were selected for open appendicectomy and 50 for laparoscopic appendicectomy. There were 72% male patients as compared to 28% female patients with age variation from 13-58 years. Mean age was 26.6%. Thus acute appendicitis being common in adult males as compared to adult females.

Operative time:

i) Open Appendicectomy.

The mean calculated was 49.9 minutes, with time varying from 35minutes to 1hour 10 minutes.

ii) Laparoscopic Appendicectomy

The mean calculated was 48.78 minutes with time varying from 37 minutes to 1hour.

Hospital stay:

i) Open Appendicectomy.

It was calculated in days, with day of surgery as zero day and date of discharge as the last day. The mean was 3.9 days.

i) Laparoscopic Appendicectomy

The mean time calculated in days was 1.6 days.

Post op analgesia requirement:

i) Open Appendicectomy.

This was calculated as number of injections required post operatively in hospital and before discharge. The requirement was almost the same as in laparoscopic appendicectomy with mean of 2.3% as compared to 1.3% as compared to laparoscopic appendicectomy.

ii) Laparoscopic Appendicectomy

The mean requirement was 1.9%.

Return of bowel function:

i) Open Appendicectomy.

This was defined as the passage of flatus and audibility of gut sounds, indicating return of bowel function. The mean was 12hours and 40 minutes.

ii) Laparoscopic Appendicectomy

The mean time required as calculated for return of bowel movement was 8 hours and 20 min.

Oral fluids allowance/ NPO off.

i) Open Appendicectomy.

This defined as allowing of oral fluids to patients post operatively and was calculated in hours. The mean was 18 hours.

ii) Laparoscopic Appendicectomy

The mean time calculated was 12 hours.

Post op complications:

Wound infection

i) Open Appendicectomy.

This is defined as wound infection leading redness, erythema with serosengious discharge from wound 3-4 days after surgery. There were 3 patients, which had post op wound infection and were managed by daily dressing and antibiotic cover.

ii) Laparoscopic Appendicectomy

Only 1 patient had postoperative wound infection.

Procedure	Laparoscopic	Open
Agha Khan Hospital		
Operative time	83.7+-25.13	71.4+-18.07
Return of bowel function (hrs)	10.6+-8.2	21+-13
Wound infection (%)	-	-
Hospital stay (days)	1.97+-23	3.1+-1.8
Nawaz Sharif Hospital		
Operative time	42.78%	49.9%
Return of bowel function (hrs)	8.20	12.40
Wound infection (%)	2	6
Hospital stay (days)	1.6	3.9

	Laparoscopic appendicectomy	Open appendicectomy
Time	55 min	25 min
Hospital stay	1 day	3 days
Pain duration during which injectable was required.	12 hours	36 hours
Wound Infection	none	3/53

DISCUSSION

A number of studies have been carried out in Pakistan till date comparing Open Appendicectomy to Laparoscopic Appendicectomy. In most of the studies, it is concluded that Laparoscopic appendicectomy is better than open. Is it superior then open appendicectomy? In our study,

Laparoscopic Appendicectomy was found superior with better outcome then open Appendicectomy. Compared to a retrospective study carried out in Agha Khan University Hospital, Karachi, in 2004, there result also revealed that Laparoscopic appendicectomy was a better option compared to open appendicectomy.

Our study revealed that there was less operative time in Laparoscopic appendicectomy as compared to previous studies done by Agha Khan Hospital and also one done in Jamshoro, which revealed that their operative time in case of Laparoscopic appendicectomy was more than open appendicectomy, but their hospital stay was less in case of laparoscopic appendicectomy. In addition, the rate of postop wound infection was less in lap appendicectomy with early return of bowel function.

Another study comparing the laparoscopic appendicectomy vs open appendicectomy was carried out in 2003, at department of surgery, Nishtar Medical College, Multan[15]. In this study, it was also conceded that laparoscopic appendicectomy though new and expensive was a better option as compared to open appendicectomy as there was an added benefit of better visualization in cases of young female patient where the diagnosis between gyneacological causes cannot be ruled out. There result is as follows.

In another study which was carried out internationally in US in 1997[14] among many Nationwide inpatient samples 43,757 patients were selected, 17.4% underwent Lap. Appendicectomy and 82.6% underwent Open appendicectomy. Patients were predominantly white male. There was shorter hospital stay 2.06 days in case Laparoscopic appendicectomy and 2.88 days in Open appendicectomy P<0.0001. There was lower rate of infections odds ratio OR= 0.5 [0.38, 0.66], P<0.0001 and less gastrointestinal complications OR=0.8 [0.68, 0.96] P=0.02 with lower overall complications OR =0.84 [0.75, 0.94] P= 0.002 and higher rate of routine discharges OR=3.32{2.47, 4.46] P<0.0001.

CONCLUSION

Laparoscopic appendicectomy is a better surgical option for acute appendicitis as compared to open appendicectomy with less operative time, less hospital stay, early return of bowel functions and less chances of post op wound infection. There was also less need for post op analgesia requirement, thus overall leading to early mobility of patient and return to normal life.

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